

IN THE CLAIMS:

1. (currently amended) A method of fabricating a polysilicon film, comprising the steps of:

- providing a substrate;
- depositing an amorphous silicon film on the substrate by the process of physical vapor deposition;
- introducing a metal catalyst to the previously deposited amorphous silicon film; and
- ~~annealing the amorphous silicon film to form a crystallized region by pure metal induced crystallization; and~~
in response to the annealing, suppressing partial solid phase crystallization (SPC) in the amorphous silicon film.

2. (currently amended) The method of claim [[1]] 23 further comprising the step of irradiating the crystallized region with an excimer laser after the step of annealing the amorphous silicon film.

3. (currently amended) The method of claim [[1]] 23 further comprising the step of fabricating a thin film transistor in the crystallized region.

4. (currently amended) The method of claim 1 further comprising the step of utilizing the crystallized region in a liquid crystal display.

5. (original) The method of claim 1 wherein the amorphous silicon film is deposited using Argon as a sputtering gas, and wherein the Argon content in the amorphous silicon film after the deposition step is in the a range of 2×10^{18} at/cm³ to 5×10^{21} at/cm³.

6. (original) The method of claim 1 wherein the amorphous silicon film is deposited using Argon as a sputtering gas, and wherein the Argon content in the crystallized region after the annealing step is in the range of 2×10^{18} at/cm³ to 5×10^{20} at/cm³.

7. (original) The method of claim 1 wherein the annealing step is conducted at a temperature greater than 650 °C and for a time period greater than 200 seconds.

8. (currently amended) The method of claim ~~[[1]]~~ 23 wherein forming the crystallized region includes producing the annealing step produces a crystallization growth front length of at least 80 μm.

9-11. (canceled)

12. (original) The method of claim 1 further comprising the step of providing a barrier layer on said amorphous silicon film wherein said barrier layer includes a window therein for the introduction of said catalyst to said amorphous silicon film.

13-19. (canceled)

20. (currently amended) A method of fabricating a polysilicon film, comprising the steps of:

providing a substrate;

depositing an amorphous silicon film on the substrate by the process of physical vapor deposition;

in a separate step from the deposition of said amorphous silicon film, depositing a metal catalyst film on the amorphous silicon film; and

annealing the amorphous silicon film and the metal catalyst film to form a crystallized silicon film by pure metal induced crystallization, wherein the annealing step is conducted at a temperature greater than 650 °C and for a time period greater than 200 seconds and less than 800 seconds;

metal-induced crystallizing the amorphous silicon film; and
simultaneously with the metal-induced crystallizing,
suppressing partial solid phase crystallization (SPC) in the amorphous
silicon film.

21. (previously presented) The method of claim 1 wherein said metal catalyst is chosen from the group consisting of aluminum, indium tin oxide, nickel, cobalt, palladium and germanium.

22. (currently amended) A method of fabricating a polysilicon film, comprising the steps of:

providing a substrate;

depositing an amorphous silicon film on the substrate by the process of physical vapor deposition;

after deposition of said amorphous silicon film, depositing a metal catalyst film on selected regions of the amorphous silicon film; and annealing the amorphous silicon film and the metal catalyst film to form a crystallized silicon film by pure metal induced crystallization in said selected regions;

metal-induced crystallizing amorphous silicon film in said selected regions; and

simultaneously with the metal-induced crystallizing, suppressing partial solid phase crystallization (SPC) of the amorphous silicon film in said selected regions.

23. (new) The method of claim 1 further comprising the step of metal-induced crystallizing the amorphous silicon film, forming a metal induced crystallized region, in response to the annealing.

24. (new) The method of claim 1 wherein depositing an amorphous silicon film on the substrate by the process of physical vapor deposition includes structurally damaging the deposited amorphous silicon film; and,

wherein suppressing partial SPC in the amorphous silicon film includes suppressing partial SPC in response to the structurally damaged amorphous silicon film.

25. (new) The method of claim 23 further comprising the step of, in response to metal-induced crystallizing the amorphous silicon film, entirely consuming the metal catalyst.